ABSTRACT OF THE DISCLOSURE

A method and apparatus for producing a very high repetition rate gas discharge laser system in a MOPA configuration is disclosed which may comprise a master oscillator gas discharge layer system producing a beam of oscillator laser output light pulses at a very high pulse repetition rate; at least two power amplification gas discharge laser systems receiving laser output light pulses from the master oscillator gas discharge laser system and each of the at least two power amplification gas discharge laser systems amplifying some of the received laser output light pulses at a pulse repetition that is a fraction of the very high pulse repetition rate equal to one over the number of the at least two power amplification gas discharge laser systems to form an amplified output laser light pulse beam at the very high pulse repetition rate. The at least two power amplification gas discharge laser systems may comprise two power amplification gas discharge laser systems which may be positioned in series with respect to the oscillator laser output light pulse beam. The apparatus and method may further comprise a beam delivery unit connected to the laser light output of the power amplification laser system and directing the output of the power amplification laser system to an input of a light utilization tool and providing at least beam pointing and direction control. The apparatus and method may be a very high repetition rate gas discharge laser system in a MOPO configuration which may comprise: a first line narrowed gas discharge laser system producing a first laser output light pulse beam at a pulse repetition rate of $\geq$ 2000 Hz; a second line narrowed gas discharge laser system producing a second laser output light pulse beam at a pulse repetition rate of $\geq$ 2000 Hz; a beam combiner combining the first and second output light pulse beams into a combined laser output light pulse beam with a $\geq$ 4000 Hz pulse repetition rate. The apparatus and method may comprise a compression head comprising a compression head charge storage device being charged at x times per second; a gas discharge chamber comprising at least two sets of paired gas discharge electrodes; at least two magnetically saturable switches, respectively connected between the compression head charge storage device and one of the at least two sets of paired electrodes and comprising first and second opposite biasing windings having a first biasing current

for the first biasing winding and a second biasing current for the second biasing winding and comprising a switching circuit to switch the biasing current from the first biasing current to the second biasing current such that only one of the at least two switches receives the first biasing current at a repetition rate equal to x divided by the number of the at least two sets of paired electrodes while the remainder of the at least two magnetically saturable switches receives the second biasing current. The apparatus and method may be utilized as a lithography tool or for producing laser produced plasma EUV light.